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Citizen Centric ICT Initiatives for Rural Development in Indian Context: A Framework

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ABSTRACT

Information and Communication technology (ICT) initiatives for rural development in India are not new. Many of these initiatives have shown mixed response. Most of these projects are incubated with government support. A development project to be sustainable, it should move from “supply-driven” concept to “demand driven” (citizen centric). Rural citizens deprived of infrastructural support and opportunity to earn sustainable livelihood, are not capable of leveraging the services created for them. This paper attempts to understand what the citizen-led design process is, the factors contributing to the design process, and then discusses a participatory appraisal tool to create an ambience where citizens assess their requirements and influence the service providers to perpetually create and deliver the required services. A framework is discussed to address these issues through design of metrics. Lastly, relevance of this tool is discussed through an illustrative example which was applied in a village during our study.

Keywords

User, ICT, Information System Metrics, Participatory Rural Appraisal Methods, Development Process, User-led Information Systems, Rural Citizen

INTRODUCTION

Information and communication technology (ICT) projects require proper identification of users’ needs. ICT is a bundle of hard and soft components, where hard components are technology driven (system software, communications and power) where the users do not have any control. Soft issues relate to understanding processes, modeling and their automation. Managing the soft issues and technology enabled processes depend on the users’ capability. A synergic effect is possible when the soft issues are supported by the right kind of infrastructure in the supply-chain. These require a rigorous information system (IS) planning (Ward & Peppard, 2002).

Identifying the right types of services with users’ perspective is important to make an ICT initiative successful (Jokela, 2002). While there is phenomenal growth in ICT-enabled processes, decrease in cost of computing, increase in acceptability of e-business, e-commerce and m-commerce activities; failures plague the projects. Despite having a good method, many projects fail due to its less usability. There is a growing concern over evaluating, managing and measuring effectiveness of ICT infrastructure created (Lycett, Macredie, Patel and Paul 2003).

Indian ICT initiative makes the situation even more critical, not because it involves the rural infrastructure, but the complex process of involving the rural masses. These masses (the rural citizen), who lack basic livelihood opportunities, are least concerned with ICT initiatives. It is therefore, important for the policy makers to direct the ICT initiatives for addressing not only the feasible business practices (e-business, e-commerce etc.), service oriented opportunities (e-governance, e-government etc.), but also integrate the demand based services for these citizen. Unless directed towards creating “services on demand” and “stakeholder-ownership oriented development” initiatives, the projects taken up for intervention may not guarantee success.

In order to make the interventions successful, it is essential that the people themselves identify their issues, prioritize their needs, manage their infrastructure and services with the support of government, NGOs, etc., monitor their resource utilization

and draw benefits. Increasing their capability to list the issues and to lead the intervention process is quite complex. Before embarking on any initiative in general and ICT initiative in particular it is important to understand these attributes (Prabhu, 2004). If processes are understood and prioritized properly, ICT interventions would bring in significant improvements in addressing the issues in development process and citizens' role is of paramount importance (Bhatnagar, 2004; Satyanarayana, 2004).

In this paper we discuss how the ultimate stakeholders, who are considered to be the system users, can be involved in the planning process to elaborate the soft issues leading to a better IS planning and eventually create an effective ICT infrastructure. Besides, they would also be able to monitor and evaluate the interventions carried for their development. We discuss the concept and importance of user-led design process and the role of IS planning and its effect on ICT planning. Further, we elaborate the development process and effect of cooperation in the development process. The importance and use of participatory rural appraisal (PRA) as a tool to involve the ultimate stakeholders (the system users) in the planning process, are presented. System metrics are identified through PRA methodology. Besides, a causal framework citing the relationships among the metrics is also discussed in order to appreciate the IS planning process that may lead to evaluation of opportunities to introduce ICT. Finally, an application of the PRA as a tool for the IS planning and development is illustrated through a case. We conclude the paper with an analysis of the findings and provide an indicative direction to further research.

CITIZEN-LED ICT INITIATIVES

The ICT initiatives based on various business and governance models, are still evolving and are being considered for scaling up. However, it is not encouraging because of lack of interest among rural citizens (Bhatnagar, 2004; Misra and Gachhayat, 2004; Prabhu, 2004; Satyanarayana, 2004). Besides, poor ICT and related infrastructure such as electricity, education, transport etc., are affecting these initiatives considerably. It is therefore, essential that any rural ICT initiative in Indian context should primarily be led by the rural citizen (the user) with the active support of agencies involved.

Citizen-Centered Design Process

User-centered design (UCD) is one major area of research in current context and in this paper the rural citizen are defined to be the users. UCD practices are aimed at understanding the users, their behavior and incorporating them in the product/service delivery. ICT initiatives for rural development can also therefore, be mapped with this perspective. Normally UCD (Jokela, 2002) practices are described through ISO13407 as shown below in figure-1.

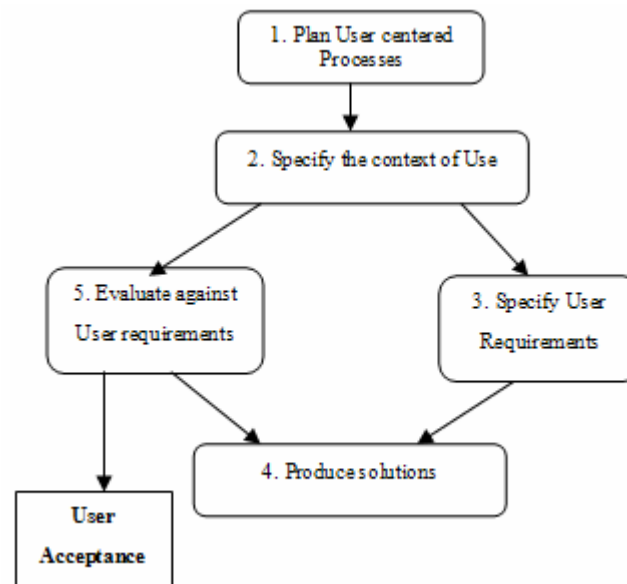


Figure-1. UCD Framework

Citizens’ acceptance is a major concern for success of ICT initiatives. The citizens neither have the exposure nor ability to evaluate any of the attributes described in figure-1. Presently the initiatives are conceptualized, put as pilots and then used without citizens’ active participation. Innovations are necessary for harnessing experiences gathered and then evolving these initiatives to scale up. ICT initiatives need careful consideration of the factors responsible for successful scaling-up and one of these is “User Acceptance” (Lamb and Kling, 2003). The user acceptance model for information technology (Venkatesh, Morrish, Davis and Davis 2003) is presented in Figure-2.

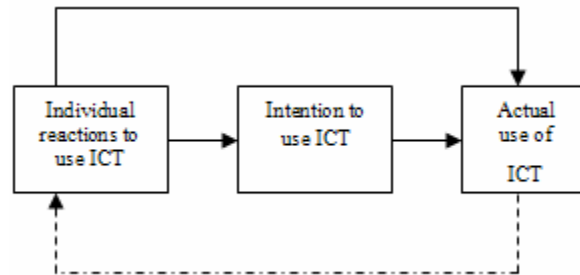


Figure 2. Concept of User Acceptance

It is essential to understand citizens’ needs for considering ICT options for income generation and other desired services. The chosen ICT options should showcase the possibility of scaling up. Presently, Indian ICT interventions are focused on e-governance, e-government perspectives (Satyanarayana, 2004; Bhatnagar, 2004) with a view to providing citizen centered services. There are also other models with business perspective like ITC e-Choupal (Sivakumar, 2004), composite kiosk based services (Misra and Gachhayat, 2004). However, poor acceptance of all these models is due to lack of concerted effort to map the citizen priorities rendering these initiatives to remain supply-driven. Without a strategy to convert these supply-driven projects to demand-driven it is unlikely that such projects would succeed during scaling-up.

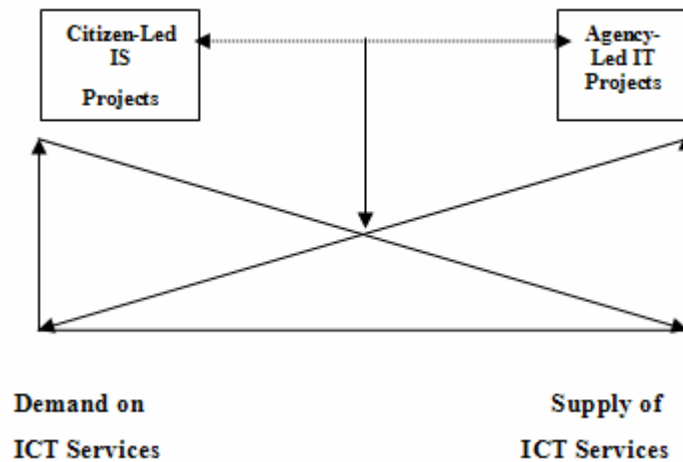


Figure-3. ICT Projects for Rural Development

Citizens’ acceptance determines the scope to transform the initiatives to be “demand driven” (Bhatnagar, 2004). Citizen-led IS planning can create a good demand for ICT services (figure-3). Effectiveness of projects/ programmes are determined by responsiveness, community-rooted ness, frontline acceptability, respectful trust and relationship, usability. This will happen only when the projects are citizen-led.

ICT and Development Initiatives

Rural ICT initiatives, especially through various e-governance, e-government, e-business models, have hastened the development process (Bhatnagar, 2004). There is evidence that ICT can be applied for enhancing opportunities for rural livelihood, generating employment, provide business opportunities and rendering ICT enabled services such as e-health, e-education etc. (Prabhu, 2004),(Misra and Gachhayat, 2004). However, these ICT initiatives are not free from challenges. The digital-divide syndrome, which was primarily perceived as a problem rather than one of the symptoms led to poor design of the ICT initiatives across the world (Greenberg, 2005). In India, despite having ICT policies, the problem is still mounting

and there is no sign of a sustainable solution to the complex problem of rural development (I4D, 2005). The challenge to garner benefits of ICT as a tool for development process is not by its automaton, but by aiding this process - since automation might lead to unemployment (Greenberg, 2005). Besides, deployment of ICT infrastructure in rural areas is not commensurate with the perceived benefits (Bhatnagar, 2004), thus restricting their usability in the right context (I4D, 2005). Another set of challenges that Indian ICT initiatives face, are organizing an affordable, scalable and self-sustaining ICT infrastructure to provide services for income generation, e-government and conducting business in a convergent manner. The challenge is therefore, to revisit the development process in the context of ICT interventions and explore possibility of citizens' participation.

UNDERSTANDING PARTICIPATION IN DEVELOPMENT PROCESS

Approaches to development action have transformed over the decades (Friedman 1992). From the early conception of 'absence of poverty' focussing wholly on lack of income, and associated efforts at 'economic growth', development praxis has mutated to include multiple facets of poverty such as socio-political and psychological aspects and the economic view of poverty. It has come to recognise the multi-hued life experiences of the poor informed by their inability to deal with mainstream political institutions, social others, and relevant/ influential actors in the market place. While traditional income generation and/ or poverty alleviation programmes aimed at decreasing the income poverty they by and large failed in enhancing the social conditions of the poor in the absence of any specific efforts at addressing the other facets of poverty. Theorising on civil society is increasingly emphasising the need for 'organising' among the poor and marginal sections of society; it is through the process of organising and their 'organisation' that the poor begin to acquire the mutual support system and self-belief in dealing with other democratic and market place institutions, which in turn, contributes to the development of 'citizenship' and sustainability of their livelihood related activities.

Development Management

The changed understanding of development process has made the task of development management complex. First, it has been turned upside down. From the earlier approach of starting out from 'project level objectives down to specific operations' it is now imperative for development managers to start from the other end, i.e., stakeholders. The only available signpost is the development organisation's broader institutional goals and value commitments. The process begins with participatory exploration of the conditions and knowledge of the stakeholders, their needs, wants and aspirations, and then crafts 'projects' in consonance with them. Second, the development organisation is no more the 'director' of the process but a 'facilitator' of the process. Thus, the organisation could experience variety in the conditions and aspirations of the stakeholders across sites.

These two characteristics of development management have strong implications for information management. In the earlier mode, the organisation 'knew' what information to seek, where to collect them, and how to record and process them. In the new mode, only the broad parameters of information could be anticipated. Specific data and information could be varied across stakeholders and across habitation sites. Secondly, the process throws up far more data and information since the stakeholders are not bound by an 'external framework' but are enabled to articulate from their own vantage points. Thirdly, as a consequence, the nature of information so generated could take multiple forms.

Due to the intrinsic variety and quantum of data now available, there is a danger that, a lot of it would not get used because of information handling and processing constraints. It is here that ICT has a role to play. But for this role to be played rightfully the information system design must have built-in capabilities and robustness corresponding to the quantum and variety of data.

PRA METHODOLOGY

There have been two distinctive approaches to citizens' participation in development projects; one is the classical top-down approach where the development agency identifies projects and invites the community to participate and the other is for the citizens to identify projects and invite a development agency to form an equal partnership with it to develop the project. Techniques like Participatory Rural Appraisal (PRA) are means of generating data for gaining an understanding of needs, preferences and priorities within communities (Suresh, 2002). They contribute to improving thinking, analysis, and decision-making processes related to the production, dissemination, and efficient use of lessons learned from participatory development experiences. In this paper we define PRA technique to a mix of both, i.e. a support from an agency to the community to define their own requirement.

Why PRAs?

There are several constraints in conventional methods of data gathering like high cost, time consuming, questionable accuracy, lack stakeholder participation, quantitative information generated does not explain real life situations and local knowledge is not utilized in information processing. PRA methods are essentially a process of learning about people's conditions in an intensive, iterative and expeditious manner (Chambers, 1992). The techniques are adopted to achieve increased accuracy at low costs both in terms of time and money.

Participatory Planning - Tools and Techniques

Participatory Planning is the involvement of stakeholders in planning or reviewing actions that affect them. This usually results in a programme or plan of action and activities that have been researched and designed by stakeholders. An example might be a participatory exercise to devise resource co-management plan of action for a given area.

Diagrams

Diagrams are drawn by participants to explain better issues of common interest. They include various kinds of maps for giving a bird's view of the community or zone; transects which give a horizontal view of an area or zone and act as complementary information to maps; calendars which give information on time and those changes that take place during the course of seasons and times (there are seasonal calendars, labor calendars, crop calendars and the like); historical profiles that show what important events have taken place in the life of the community, Venn diagrams help to explore institutional information, the societal power fabric including in-village groups and organizations as well as those operating in the community from outside and their linkages.

Ranking and Quantification Methods

The importance of ranking and quantification tools lies in the fact that there is no need to have absolute figures for information such as people's income. In fact, informants are unlikely to share such information. For many purposes, relative rankings are just as useful and a lot less sensitive to obtain. There are times when quantification techniques are useful even when participatory appraisals are better at getting qualitative information. Here it the use of countable objects such as pebbles, beans and nuts to help determine quantities and magnitudes of issues.

Preference/Problem Ranking

Ranking gets the community to prioritize their preferences/problems, concerns or strengths of their opinions on various issues. The first step here is to decide on what is to be ranked and/or prioritized. For example, in ranking problems it is recommended to list all problems voiced by the community. The problems are ranked taking two at a time and scores are assigned according to their priority. Probing is done to ensure that views and opinions are expressed after each comparison of pairs. After the process the scores are added and rated in order of priority resulting from individual scores by problem rated.

THE CAUSAL FRAMEWORK

The PRA methodology discussed in previous section is a tool to prepare citizen charter and their priorities for sustenance. This exercise leads to a metrics based measurement system which is an important stage for ICT acquisition life cycle (Pandian, 2003). The goal-question-metrics (GQM) methodology (Basili, Caldiera, and Rombach, 1994) strongly fits in to the deliverables of PRA exercise since it quantifies appropriate deliverables through metrics and these metrics are related to the long term aspirations of the rural citizen. A framework is presented in figure 4, which discusses the causal flow among various stages of the development process involving stakeholders and eliciting various ICT options that can be generated for interventions.

As explained in figure 4, PRA based IS planning exercise is conducted through the active participation of citizens. Usually in Indian context, villages are taken up which has the common resources for livelihood, agriculture, irrigation, education, communication, power, transport etc. Besides, each household also owns its resources for sustenance. Each household and village receives infrastructure oriented benefits and services from the government. All these resources form the basis of support for the village and household.

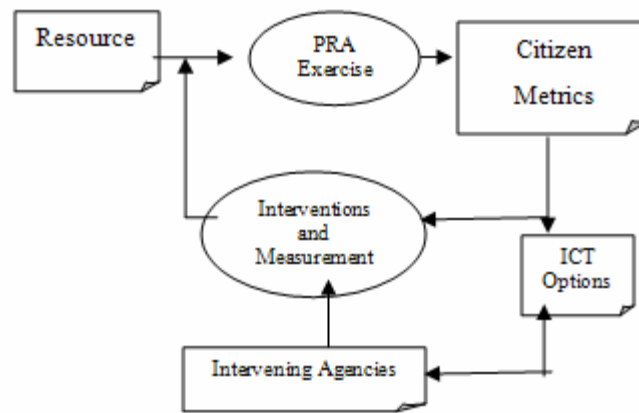


Figure 4. PRA Based IS Planning Framework

PRA Exercise

Each village and household has its problems, preferences, strength as well as priorities and PRA exercise captures these in a participatory mode as explained in previous section. Through the PRA exercise, various common issues related to village, household and individuals are listed. These abstracted versions are the metrics and these form as the basic input for measuring the deliverables of the IS planning process. The metrics are supported by measurement criteria set by the citizen themselves to determine its critical success. Metrics developed by the village, household and individuals in the village are studied by the agencies involved in addressing the issues gathered through PRA. While exploring the options, the critical success factors are listed for consideration. During PRA exercise a series of options are generated for interventions and providing services to the citizen as well as augment infrastructure. Besides, measurement criteria are also indicated by the citizen. Agencies involved in the development process therefore, are now equipped with the required indicators for interventions, measuring the possible outcomes. ICT enabled services at this stage are selected and provided. PRA exercise is a continuous process (Suresh, 2002). The feedback is therefore, an important factor for evaluating the interventions and this needs another possible PRA exercise.

AN ILLUSTRATION

The natural, physical and social assets play a vital role in people's livelihoods. Yet, there has been a steady erosion of these assets. In rural areas, ecological problems such as deforestation have played havoc in peoples' livelihoods in many ways. Climate change, soil erosion, water depletion, habitat loss, energy overuse and species extinctions are all symptoms of economic process that depletes resources. With increasing pressure on land, individual households have exploited their resources leading to unsustainable livelihoods. If the goal of development is to build sustainable livelihoods, the very people who depleted the resource base have to be involved in problem identification, analysis, prioritisation, planning, implementation, monitoring and evaluation of development projects. This calls for the bottom-up participatory approach.

Gonda Village

Gonda village (name changed) is located in a semi-arid district, Gujarat, India. In collaboration with a local NGO, PRA exercises were conducted involving villagers for the purpose of developing a micro-plan. The steps involved appears in Figure 5.

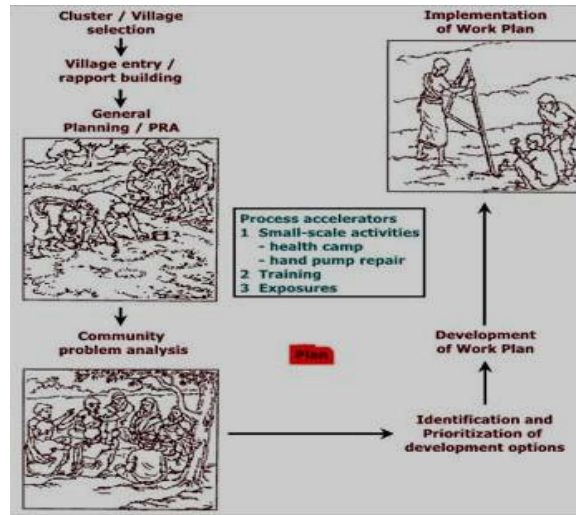


Figure 5. Steps Involved in PRA for Micro-Planning

After the preliminary introductions and ice-breaking formalities, the PRA exercises started with a village map (natural resources and social: refer to Figure 6) detailing roads, forest area, wells, ponds, check-dams temples, houses, schools, etc. Names of each head of household were also noted. This map provided the general profile of the resources and infrastructure of the village.

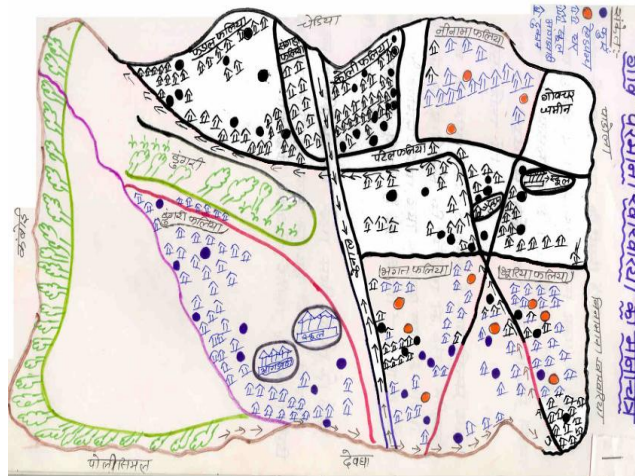


Figure 6. Natural Resource and Social Map

The Social Map is a very powerful tool in providing information on caste wise location, water resources, education, religious centres, etc. This map, after marking each home, can be used for generating information like base-line surveys on population, literacy, assets, etc. It can also be used to focus recall on issues like food security, major illness and mortality. The social map can be used for developing a house-wise profile of people below the food security level.

This was followed by information gathering on soil resources and cropping pattern. Pie diagrams were used to develop an understanding. Figure 7 provides information on the people's perceptions of the different soils in their village while Figure 8 depicts the use of these soils for food crops in two seasons (*Kharif* and *Rabi*) to meet their family food requirements.

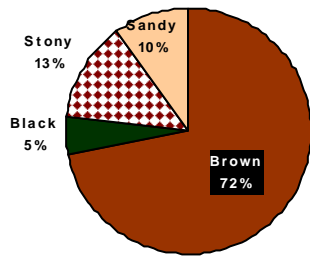


Figure 7. Village Soils

खरीफ एवं रवि फसल विभाजन

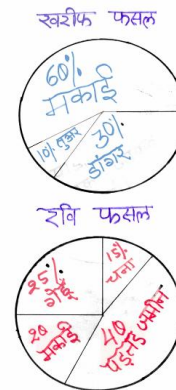


Figure 8. Cropped Area in the Village

The discussion led to the conclusion that the food produced by most households was insufficient to meet the food and fodder needs of the family and their livestock. Therefore, further information was required as to the reasons for the food shortage. A flow/process analysis was also undertaken to define the reasons for food insecurity at household level. Participatory problem analysis helped in isolating specific reasons for food shortages in the community (Figure 9). Based on the problem tree developed by participants, specific solutions were also developed.

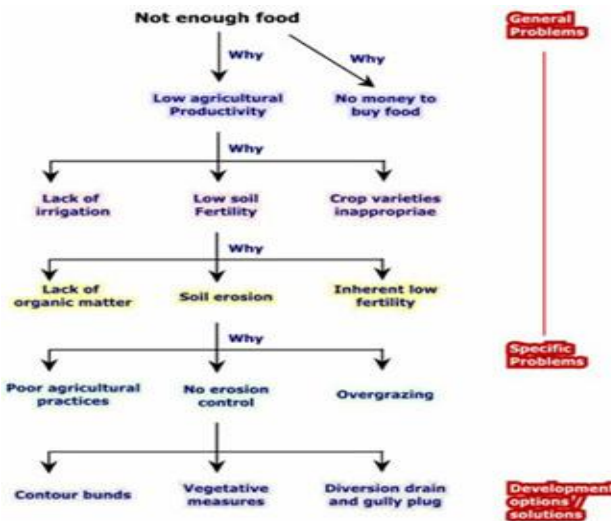


Figure 9. Problem Analysis (Example: Not Enough Food)

Similar insights can be gained by participatory exploration for all branches at different levels of the tree and local solutions can be generated. The list of reasons can be further ranked/scored for eliciting preference/priorities for achieving food security. Similarly, seasonal analysis of the food security can be done for understanding the food availability, season-wise or month-wise, and how people cope up with food/fodder deficits in different periods.

Although, problem analysis technique provides useful analytical information, the origin of the problem is rooted in the wider environment. A participatory historical trend analysis provides a clearer understanding of the cause/s. Peoples’ perceptions of changes in 50 years (1950 – 2000) is depicted in Figure 6 with respect to forests, animals, soil fertility, rainfall and population (column 2 - 5 in figure 10).

वर्ष	लिंग	जनसंख्या	जमीन/जिन्दा	योग	जनसंख्या
1950-60	♂♂♂♂♂♂ ♀♀♀♀♀♀	□□□□□□ □□□□□□	○○○○○○ ○○○○○○	~~~~~ ~~~~~	☺☺☺☺☺☺ ☺☺☺☺☺☺
1960-70	♂♂♂♂♂♂ ♀♀♀♀♀♀	□□□□□□ □□□□□□	○○○○○○ ○○○○○○	~~~~~ ~~~~~	☺☺☺☺☺☺ ☺☺☺☺☺☺
1970-80	♂♂♂♂♂♂ ♀♀♀♀♀♀	□□□□□□ □□□□□□	○○○○○○ ○○○○○○	~~~~~ ~~~~~	☺☺☺☺☺☺ ☺☺☺☺☺☺
1980-90	♂♂♂♂♂♂ ♀♀♀♀♀♀	□□□□□□ □□□□□□	○○○○○○ ○○○○○○	~~~~~ ~~~~~	☺☺☺☺☺☺ ☺☺☺☺☺☺
1990-2000	♂♂♂♂♂♂ ♀♀♀♀♀♀	□□□□□□ □□□□□□	○○○○○○ ○○○○○○	~~~~~ ~~~~~	☺☺☺☺☺☺ ☺☺☺☺☺☺

Figure 10. Historical Trends in the Village

It is fairly evident that with depleting forest cover, soil degradation and changing rainfall patterns, peoples’ livelihoods have become vulnerable. Decline in animal population on which peoples’ livelihoods were partially dependent on and concurrent increase in human population have contributed to the decline in food security.

A Venn/chapatti diagram (figure 11) was constructed leading to the identification of individuals/groups/institutions that influence the village. This provides valuable information on peoples’ perceptions of different individuals/ groups/ institutions that play critical role in their livelihoods. The magnitude of importance is indicated by the size of the circle while the distance from the center indicates the centrality to their livelihoods.

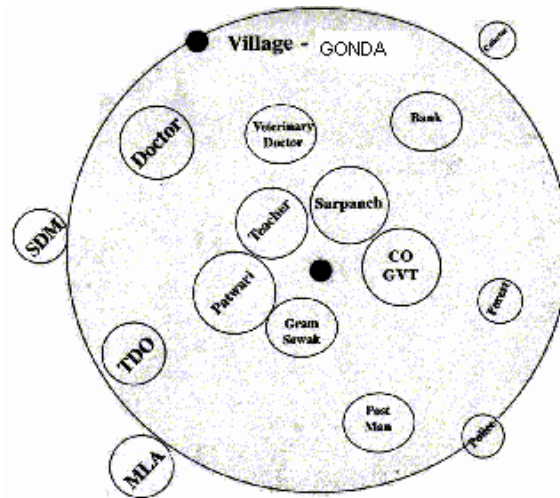


Figure 11. Venn Diagram

For example, according to peoples’ perceptions, although a doctor treating their family members has greater importance compared to a veterinary doctor as indicated by the size of circles, the veterinary doctor seems to play a more crucial role than the doctor that treats their family since the veterinary doctor is closer to the center of the circle (Figure 11). The finding from the Venn diagram provides an immediate list of key persons, groups and institutions who need to be contacted about proposals which affect the larger village.

A four directional transect with key informants involved observing, asking, listening, discussing, learning about different zones, local technologies, introduced technologies, seeking problems, solutions and identification of a major opportunities for development. The transect also helped in cross-checking details of the resource cum social map (Figure 6). A unidirectional cross-section of the transect is presented in Figure 12.

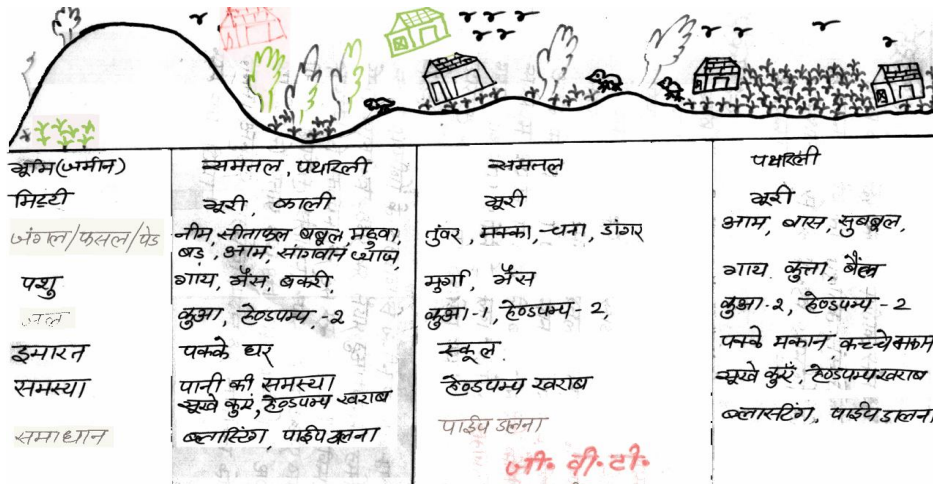


Figure 12. Village Transect (Unidirectional)

In order to identify the poorest of the poor households, a wealth ranking exercise was carried out with a group of villagers, based on the list of household heads made on the social map. Wealth ranking started with identifying and grouping households into some categories (ranging from very rich to very poor) identify by the people themselves based on their own characterization of “wealth”.

Integrating information generated by PRA methods provides a holistic understanding of the village and its people, its resource base, the social structure and dynamics, problems (their origin and causes), among other things from peoples’ perspectives. It helps us see their world through their eyes and understand their complex realities. This integrated information was utilised for micro-planning with the people. Figure 13 provides view of the micro-plan developed by residents of Gonda.

Each card represents a problem and is placed in concentric circles depending on the urgency felt by the people (both men and women). The problems in inner most circle needs immediate attention while the problems listed outer most circle can be taken up at a later stage. The problems listed in the outer most circle does not necessarily mean that they are any less important.



Figure 13. Village Micro-Plan

Based on the village micro-plan, an implementation schedule for five years (Figure 14) was developed by the people themselves indicating their preferences and urgency.

Work Plan For Year-2001 To 2006

**गाँव परमाणु स्तरवर्षा के शायीकी की धिन्दगी सुधा के लिए
गतिविधियों का आयोजन-वर्ष 2001 से 2006 तक**

वर्ष	कार्य
2001	कुवा बनासिंह हेडपम्प नर एवं होलिण के पालाबन्दी, पेकडेम, धासनार, गहरो के लिए फफन खेती एवं डसरे बासन, मुखीपालन, प्रवास तालिम, खादक बीज देवा खेती का फस, शौचालय व्यवस्था, बन्नापालन, आयुष्य केन्द्र, शिक्षण व्यवस्था एवं सामग्री.
2002	नखरी, डकान, चवडी, आवास योजना, छोटे उद्योग, कुवा पनका करना, संगीत माधन, मण्डल एकोरेशन बासन, गहरो के सलयता, बास काम, आगज बैक, आबक बनाने के काम आदि. मुगि काम हेर सहाय
2003	तालिम, प्रवास, मसाला उद्योग, अनुनाशक देवा एवं स्प्रेणक, पशुकेम, मनुष्य केम, पालाबन्दी, अनाज साक करने का पंखा, फटर, आबक बनाने का
2004	नवीन होडफस कुवा, कुवा पनका, शिक्षण का एवं सामग्री, अनाज बैक, मुगी-मुगी उद्योग, बन्नी-बन्ना पालन, नडेव, अचरे बीज, खाद, खेती ओपार, आवास योजना के सहाय, मसाला उद्योग, गहउद्योग, वासकाम, मिखी, मोची, कुन्हा ओपार.
2005	नखरी, एवं गडे खोदने का काम, फिलिंग काम, शिक्षण का, अनाज कारने एवं साक करने के साधन, निहूम सुहटे, आन उद्योग, गहउद्योग, अनुनाशक देवा, पशु केम, तालिम, प्रवास, पशुपालन.
2006	पालाबन्दी, अचरी खेती के लिए बीज, खाद, ओपार, पशुपालन, मुगि काम बनाने हेर सहाय, केम, तालिम, प्रवास

Figure 14. Implementation Schedule Prepared by Villagers

IS PLANNING PROCESS

Based on the application of GQM principles on the PRA exercise conducted in the village provided an insight to the preferences of the citizen services. The goal of most of the citizen in the village is “sustainable livelihood security”. We analyzed the goal and understood that citizen have their measurable preferences to meet their goal. These are termed as the “metrics” and listed as “food security”, “health and sanitation facility”, “education facility”, “financial security”, “social security”, “cultural security”. Among these metrics we took two most important metrics as chosen by the citizen which are “food security” and “health security for them as well as their animals”. In table 1 we discuss various measurements that citizen attached to each metric to understand the existence of these facilities to verify these metrics. Further, all these measurements are examined with possible ICT options that can be used for interventions so as to measure the metrics identified.

Goal	Metrics	Measurements	Demand on ICT Options	Remarks	ICT Option Ranking ¹
Sustainable Livelihood Security	Food Security	Self sufficiency on food	Demand for Information on Income Generating Opportunities from government and other agencies	Kiosk based services for citizen	Ia
		Self sufficiency on fodder	Least Demand	Nil	Ib
		Migration for supplementing food	Demand for Information on employment opportunities	e-Government applications	Id
		Availability of work opportunity locally	Demand for Information on employment opportunities from government and other agencies	e-Government applications	Ic
		Access to input and output market	Opportunity on marketing	e-Business applications and services	Ie
	Health Security (Human)	Public Health Service	Providing opportunities in the village	e-Health Services	IIIa
		Traditional Health Service	Rendering services to other Villages	Nil	IIIe
		Health Education	Creating Opportunities in the Village; Maintaining Records	e-Health Services	IIIb
		Immunization Services	Providing Information on Immunization details and history	e-Health Services	IIIc
		Accessibility to Health Infrastructure	Providing Information on Doctors, Interaction with Doctors, Receiving advice from Doctors	e-Health Services	IIId
	Livestock Security	Clinical Service	Maintaining Health Records	e-Health Services	IIa
		Artificial Insemination	Providing facilities in the village, access to information on availability	e-Health Services	IIc
		Availability of Medicine	Providing facilities in the village, access to information on availability	e-Health Services	IIb
		Dairy Cooperative	Providing facilities in the village, access to information on marketing inputs, pricing	Dairy Information Kiosk	IIId

Table 1: Identification of PRA Based ICT Options

Discussion on ICT Options

In the illustrative case study of ICT options listed in table 1 suggest that villagers have ranked e-government/ e-governance applications for livelihood security as top priority (Rank-I) followed by animal services and then human health services for households. This citizens' priority ranking is generated through PRA exercise and reveals their intentions to use the services, if provided.

CONCLUSION

ICT is being strongly believed to be a service enabler tool in development process and it is also advocated that ICT acts as a medium to poverty alleviation (Greenberg, 2005). In Indian context the policies for poverty alleviation are being planned with a top-down strategy making it "supply driven". As discussed (figure 3), supply driven projects do not generate much demand unless the planning process involves the citizen. Creating an atmosphere for eliciting the requirements and prioritizing the needs of citizens is a complex phenomenon because of the spatial, political, social, religious and cultural dynamics. It is therefore, necessary to balance the system that encourages availability of the supply driven services with active citizens' participation. As illustrated in the Gonda village case, the priorities are defined by the citizens captured through PRA exercises vide figure 5 through figure 14 (GVT,2005). However, the demands elicited are illustrative in nature

¹ Suffix a, b, c, ... denotes intra-group prioritization

and a detailed study is necessary to fine-tune any such prioritization. Authors plan for further research in this area to substantiate the findings from work done in this area.

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REFERENCES

1. Basili, V.R., Caldiera, G. and Rombach, H.D., (1994), *Goal Question Metrics Paradigm, Encyclopaedia of Software Engineering*, Vol.1, pp.528-532, Wiley.
2. Bhatnagar, Subhas, (2004), “*e-government: From Vision to Implementation, A Practical Guide with Case Studies*”, Sage Publications, New Delhi, pp.60-64.
3. Chambers, R. (1992). *Rural appraisal: Rapid, relaxed and participatory*. IDS Discussion Paper 311. Brighton: IDS.
4. Chennai Statement: Up-Scaling Pro-Poor ICT Policies and Practices, Report on Workshop held in November, 17-19, 2004 in Chennai conducted by Swami Nathan Foundation, India, I4D, New Delhi, February, 2005.
5. Fridman, John (1992): *Empowerment: The Politics of Alternative Development* Cambridge MA & Oxford UK: Blackwell
6. Greenberg, Alan, (2005), *ICT for Poverty Alleviation: Basic Tool and Enabling Sector*, Sida Publications, Montreal, Canada.
7. <http://www.worldbank.org/poverty/mission/up1.htm> 21st Feb. 2004.
8. Jokela, T., (2002), *Assessment of User-Centred Design Processes - Lessons Learnt and Conclusions*. in Proceedings of PROFES 2002. Rovaniemi, Finland.
9. Suresh, Kumar, (2002), *Methods for Community Participation: A complete Guide for Practitioners*, Vistaar Publications, New Delhi, pp.40-52.
10. Lamb, Robert and Kling, Rob, (2003), *Re-conceptualising Users as Social Actors in Information Systems Research*, *MIS Quarterly*, Vol.27, No.2, June pp197-235.
11. Lycett, Mark, Macredie Robert D., Patel Chaitali and Paul Ray J. (2003), “Migrating Agile Methods to Standardised Development Practice,” *Computer Magazine, IEEE Computer Society*; June 2003, Volume 36, Number 6, New York, pp79-85.
12. Mishra, Satyan, Gachhayat, Nitin, (2004), *Rural Business through ICT: Profitability and Role of Governance*, IRMA Silver Jubilee Symposium, 14-19, Anand, India.
13. Pandian, Ravindranath, C., (2003), *Software Metrics*, Auerbach Publications, New York, Washington D.C.
14. Prabhu, C.S.R., (2004), “*E-Governance: Concepts and Case Studies*”, Prentice-Hall of India, New Delhi, pp.10-25.
15. Satyanarayana, J., (2004), *e-Government, the Science of the Possible*”, Prentice-Hall of India, New Delhi, pp.8-22.
16. Sivakumar, P., (2004), *ITC e-Choupal: Enmeshing interests, enhancing incomes*, IRMA Silver Jubilee Symposium, 14-19, Anand, India.
17. Venkatesh, Vishwanath, Morris, Michael G., Davis, Gordon B., and Davis, Fred D., (2003) *User Acceptance of Information Technology: Toward a Unified View*, *MIS Quarterly*, Vo.27 No. 3, September, pp425-478.
18. Ward, John, & Peppard, Joe, (2002), “*Strategic Planning for Information Systems*”, John Wiley and Sons, England, pp. 40-45.